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Acquisition streamlining efforts within the space and Naval Warfare Systems Command.

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ACQUISITION STREAMLINING EFFORTS
WITHIN THE
SPACE AND NAVAL WARFARE SYSTEMS COMMAND

by

Michelle Cecille McKeever

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Acquisition Streamlining Efforts Within the Space and Naval Warfare Systems Command

by

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ABSTRACT

In 1986, Deputy Secretary of Defense W. H. Taft IV, established an "Acquisition Streamlining Initiative" (ASI) which addresses and attempts to "streamline" the acquisition process and mandated requirements. This research reviews efforts of one Hardware Systems Command--the Space and Naval Warfare Systems Command (SPAWAR)--to implement ASI. In reviewing the five major programs streamlined thus far at SPAWAR, it was found monetary savings have been achieved. The various manner and methods in which the savings were achieved, however, is the primary focus of this study.

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I. INTRODUCTION

> Defense contractors get alot of bad press about things like $600 hammers. But if you saw the government's ridiculous specifications, you'd marvel that it could be built for only $600.
>
> --Government Contractor
> Washington Business Journal
> 3 November 1986

A. THE ISSUE

During the last few years, the manner in which the Department of Defense (DOD) has conducted business has been found unsatisfactory by Congress and the American public. Particularly, gross excesses, loss of accountability, and general poor management in the procurement arena have been cited. Congress has thus become adamant that DOD change the "business-as-usual" mindset and aggressively seek efficient, cost-cutting measures.

In an attempt to address these concerns, Deputy Secretary of Defense W. H. Taft IV established, in 1986, an "Acquisition Streamlining Initiative" (ASI) designed to "streamline"--or simplify and update--the acquisition process. This research reviews effort by one hardware systems command, the Space and Naval Warfare Systems Command (SPAWAR), to do just this; by streamlining, or using a common-sense approach in the acquisition of complex systems, can time and money really be saved.

This Chapter attempts to present the macro view of streamlining and ASI, inter alia, what it is, where it originated. Chapter II takes this macro view and begins to narrow it down to what interpretations and views the Navy holds on the subject. The Navy's policy guidance is presented. In turn and in addition, SPAWAR's interpretation and policy guidance is set forth.

Chapters III and IV focus on SPAWAR's efforts in implementing ASI. Since SPAWAR encompasses both Navy and Marine Corps programs, each has a separate chapter. Finally, Chapter V presents conclusions regarding SPAWAR efforts, and ASI in general.

For further clarification, appendices are included for the reader. Appendix A is a list of terms and definitions and Appendix B lists programs currently targeted for streamlining.

B. BACKGROUND

It is DOD policy to have a uniform series of standards and specifications for application in the procurement process. The Defense Standardization and Specification Program (DSSP, which is governed by DOD Directive 4120.3), is the program under which these standards, specifications, and related documents are prepared and maintained to meet contract requirements. Considering there are more than 40,000 military specifications and standards in the Defense

Standardization and Specification Program, the statement that first appears in this chapter does not seem as ludicrous as first it appears. In fact, as Figure 1 shows, the overabundance of military specifications and standards can be, and is, often cited as the major reason that acquisition programs become too expensive, fall behind schedule, and cannot meet their required performance goals! It is not surprising, therefore, that the costly, complex world of military systems acquisition has been receiving much national notoriety--the ability of DOD in carrying out "business-as-usual" has been seriously questioned.

Defense acquisitions is the largest industry in the world, accounting for approximately $170 billion in purchases annually (Hoffmann, 1986, p. 1-1). Although DOD does manufacture a small percentage of its own equipment, it depends on the private sector to design, develop, and produce the vast majority of systems for the defense of our nation. And it is this interface that the problem of increasing bureaucracy and overregulation begins. The acquisition process of major defense systems has become so complex, so resource-consuming, that system costs have become prohibitive, and take too long to field, thereby increasing the chance of obsolescence. There must be ways to reduce the cost and time to field a weapon system. . .

FSD Contractural Requirements	DOD	Commercial
Program Plans		
Management Systems	20	0
Other than Management Systems	20	1
Specifications	210	9
Data Item Descriptions	300	0
Documents--Original Callout	550	10
Total Documents--Including Two Tiers of Referenced Documents	11,000	50
Pages of System Peculiar Specifications	16,000	400
Contractural Specification Changes	2,000	480
Separate Data Submittals	30,000	250

Source: Contract Management, August 1986, p. 5.

Figure 1. Comparison of DOD and Commercial Requirements Depicting the Overabundance of DOD Specifications versus Industry Specifications.

Deputy Secretary William H. Taft IV, in his 11 June 1984 memorandum and ensuing DOD Directive 5000.43, may have found a key: the Acquisition Streamlining Initiative (ASI).

C. STREAMLINING AND ITS ORIGINS

Streamlining is the approach of applying human common sense to the complex world of systems acquisition. As Secretary of the Navy, John Lehman, stated in a 1986 interview concerning acquisition (Woods, 1987, p. 13):

> You have to use common sense, and bureaucracies do not have common sense. They were not endowed with common sense by the Creator. Human beings were.

Thus, in broad terms, ASI is simply an attempt to:

a. Weed out the unrealistic, unnecessary, obsolete requirements, needs, and military specifications/ standards of a program;

b. Use already-developed products wherever possible (so-called Non-Developmental Items); and

c. Let the civilian contractor perform his work without being told "how-to" every step of the way.

Streamlining, however, is not exactly a new, revolutionary concept. Its roots reach back as far as 1977 with the Defense Standardization Board's "Shea Task Force" that was set up to examine the plethora of military specifications/standards (MILSPECS/STDS). This Task Force found that MILSPECS/STDS are essential to technical procurement, and as a body, are adequate. They serve as a "corporate memory" for DOD, providing lessons learned and serving as a baseline for the inexperienced program manager.

However, the Task Force also found that MILSPECS/STDS included a gross number of cost-drivers that are primarily non-product--those requirements concerning general system design, documentation, and management guidance (the "how-to's"). The Task Force concluded that MILSPECS/STDS needed to be improved upon, and that DOD needed to improve their actual application.

Then, in 1981, the Deputy Secretary of Defense, Mr. Frank Carlucci, issued a series of Initiatives to better the efficiency and effectiveness of DOD. Specifically, Initiative 14 entitled, "Reduce the Number of Department of Defense Directives and Eliminate Non-Cost Effective Contract Requirements," was in fact the harbinger of what was to become ASI. These initiatives gained momentum and support; DOD Directives started to reflect these ideas. DOD Directive 5000.1, for example, in 1982 advocated the use of common sense and tailoring of requirements to specific programs. The 1985 version of the same directive echoes these sentiments practically word-for-word:

> The acquisition strategy developed for each major system acquisition shall consider the unique circumstances of individual programs. Programs shall be executed with innovation and common sense. To this end, the flexibility inherent in this Directive shall be used to tailor an acquisition strategy to accommodate the unique aspects of a particular program. . .

The Packard Commission further amplified the Shea and Carlucci findings in its report to the President in 1986. Some recommendations included:

a. "streamline" the acquisition process to cut through bureaucratic red-tape;

b. use commercial, "off-the-shelf" components, systems, services instead of relying on rigid MILSPECS/STDS;

c. "streamline" MILSPECS/STDS themselves and invoke only relevant requirements.

d. MILSPECS/STDS should be based on industry standards such as those of the American National Standards Institute;

e. increase competition;

f. recodify all federal laws governing acquisition into a single, simplified statute;

g. authorize multi-year funding for weapons systems.

Thus, it is not surprising that the Deputy Secretary of Defense, Mr. Taft, called for action to address the problems brought to light by the Shea Task Force, the Carlucci Initiatives, and, later, the Packard Commission. It was only a matter of time before DOD Directive 5000.43 was published, creating an "acquisition streamlining initiative."

D. THE ACQUISITION STREAMLINING INITIATIVE (ASI)

ASI is a simple concept. Its major goals are to ensure requirements result from <u>intent</u>, not accident, and provide the opportunity to use ingenuity in identifying the most

appropriate contract requirements at the most appropriate time. In other words, a requirement should have to "earn its way" into a contract--not be applied in a blanket fashion. By applying those pertinent requirements and allowing industry involvement in making recommendations for the most cost-effective solutions, the costs and time of system acquisition can be reduced without decreasing system quality and effectiveness. DOD Directive 5000.43 establishes the policy of ASI by:

1. Requiring contract requirements be specified in terms of "mission results desired" vice "how-to."

2. Precluding premature applications of design specification/standards.

3. Tailoring contract requirements.

4. Limiting the contractual applicability of referenced documents (MILSPECS/STDS) to only those that are essential.

5. Requiring all DOD systems acquisition programs after 1 October 1985 to abide by ASI policies.

The ASI policy itself, as set forth in DOD Directive 5000.43 is as follows (pp. 2-4):

a. Streamline solicitations and contract requirements. Requirements that are not mandated by law or established DOD policy, and do not contribute to the system's operational effectiveness, shall be excluded.

b. Streamline contract requirements at the onset of development and every subsequent phase. Avoid premature application of design solutions.

--At the onset of Development, system-level requirements will be specified in terms of mission performance, operational effectiveness.

--Require early industry involvement.

--Prior to Full Scale Development (FSD), specifications/standards, will be cited for guidance only. In the course of contractor performance, if the requirements are found pertinent to the system, they shall be tailored for application to FSD.

--In FSD contracts, only cited specifications/ standards shall be applied (first tier). All other (second tier and below) specifications referenced shall be for guidance only.

--In Production contracts, streamlining is still pertinent with emphasis that only essential requirements are carried forward to follow-on production. In Production, only those baseline specifications/standards shall be contractually pertinent.

--During all acquisition phases, the contractors internal management systems shall be used.

--Contractors are required, under the contract, to provide recommendations for application and tailoring of contract requirements.

--The military program manager (PM) is responsible and accountable for determining what requirements will be incorporated into the contract.

c. The Military Departments shall designate an advocate of Flag or Senior Executive Service rank with responsibility of instituting policies, procedures, and management controls to assure compliance with DOD Directive 5000.43. Also, Advocates shall ensure proper training is conducted, plus, develop a program recognizing streamlining. Advocates must prepare an annual Acquisition Streamlining Plan.

Caveats are placed on this policy, however, by stating ASI does not relax requirements for (DODD 5000.43, 1986, p. 4):

1. Development and government approval of complete and definitive design data and specifications.

2. Development of an economically producible, operationally suitable, field supportable design.

3. Testing and evaluation to ensure compliance with all pertinent contractual requirements.

4. Compliance with the law and DOD policy requirements.

The benefits of ASI are noteworthy. Naturally, the dollars saved can be substantial, as can the time saved by speedy product fielding. ASI does more, however. It requires an enhanced understanding of the objective of the contract, as well as what is truly in the contract. This better understanding extends from the PM to the actual contract recipient. It focuses management's attention to priority items, not just preferences. ASI stimulates ingenuity and adopts contractor's methods and procedures. Through ASI, quality is emphasized and achieved.

E. MANAGEMENT APPROACH TO STREAMLINING

Although the Taft/DOD material presents ASI policy, neither really delves into the "how-to's" of streamlining. Instead, it is left up to the disciples, the advocates, to describe a streamlining scenario to the PM. During the Second Annual National Conference on Acquisition Streamlining that took place in Arlington, Virginia in January 1986, such a scenario is described (Conference Proceedings of the Second National Conference on Acquisition Streamlining, 1986 p. 26):

a. Understand and optimize mission requirements with the user. . .iterate.

b. Streamline the acquisition strategy plan commensurate with time of need, technical risk, and cost.

c. Use draft Requests for Proposal (RFPs). . .encourage contractors to critique.

d. Assure mission-need oriented RFP.

e. Encourage contractors to propose alternatives in addition to RFP requirements.

f. Select competitors to explore alternative solutions to the need.

g. Specify system level mission performance requirements at onset of development.

h. Challenge every requirement.

i. Specify what requirements are required, not how-to-manage.

j. Require contractors to tailor during each phase for application to the next.

k. Limit contractual applicability of references.

l. Select contractor(s) for development.

m. Pursue economically producible, operationally suitable, and field supportable designs.

n. Assure complete production specifications while providing contractor flexibility to optimize design during Full Scale Development (FSD).

Various speakers at the Conference took these "how-to" steps further and outlined typical actions the PM should be aware of, and ensure they are being conducted during all phases of the program's life. These actions include. . .

* zero-base all MILSPECS/STDS: start with none and build up

* challenge every requirement; state only clear, enforceable requirements

* eliminate redundant testing

* use draft RFPs and conduct pre-RFP briefings for industry comment

* identify goals; place no plans on a contract

* identify and quantify cost drivers

* eliminate dead-end engineering

* scrub the Contract Data Requirements List (CDRL)

* eliminate "how-to," premature, untailored, specifications/standards/requirements

* avoid "tiering" also known as "chain-referencing"

* use warranties

* establish incentives for the contractor to streamline.

Figure 2 depicts some of these responsibilities for the streamlining of requirements.

In a word, the Acquisition Streamlining Initiative is all about change--i.e., change of attitude, change in the way DOD does business. ASI is all about DOD assuming a bit more risk, acknowledging that strict control over every aspect in the complex, lengthy acquisition process is impossible. ASI uses common sense. This is heady thinking for a conservative organization, steeped in tradition, and used to assuming full control over all aspects of anything. Innovative thinking, yes, but not impossible to implement.

F. METHODOLOGY

To derive the information needed in writing this thesis, the following was accomplished:

RESPONSIBILITY	ACQUISITION PHASE		
	CONCEPT EXPLORATION	DEMONSTRATION AND VALIDATION	FULL-SCALE DEVELOPMENT
Program Manager	• Challenge technical requirements and provide for review board approval • Consider NDI and commercial products • Develop support systems to simplify application and tailoring • Make sure that program office personnel are trained in application and tailoring methodology • Use zero-base methodology to develop contract requirements	• Challenge technical requirements and provide for review board approval • Consider NDI and commercial products • Initiate management controls to assure cost-effective tailoring • Maintain tailoring record for Integrated Program Summary (IPS) at DSARC • Apply contractual warranty provisions	• Ensure schedules permit review of technical requirements by industry and program office • Authorize use of contractor internal methods process and data • Develop program cost estimates for specifications data, and management systems before including in RFP
Developer/ Contractor	• Use functional specifications – few, if any, "How to" specifications and standards • Avoid premature application of specifications and standards • Use contractor ingenuity and experience • Apply minimal format requirement on documentation	• Avoid premature application of specifications and standards • Use contractor ingenuity and experience	• Use contractor ingenuity and experience • Emphasize economical producibility by using planned production methods and processes • Ensure requirements documents are specifically cited or directly referenced in contract • Conduct "real" post-award design reviews • Conduct cost/benefit analysis using discounted cash flow • Use flexibility inherent in specifications • Use standard parts and materials • Avoid blanket imposition of nonproduct documents

Figure 2. Responsibilities for Streamlining the Technical Package.

-- Culled all available information about ASI, from various DOD Directives, Secretary of the Navy Instructions, SPAWAR guidance, and correspondence.

-- Planned and conducted two research trips to SPAWARSYSCOM, Washington, DC, one for several days, the other for one day. During these research trips, interviewed the SPAWAR Specification Control Advocate and pertinent engineers, logisticians, Program Managers currently utilizing streamlining as a management tool.

-- Conclusions drawn are a result of:

  * the aforementioned analysis;

  * comparisons of ASI tenets and principles with what was actually found at SPAWAR, vis-a-vis its interpretations of these tenets;

  * comparison of prior expectations regarding implementation of ASI, with real world implementation.

II. U.S. NAVY'S SUPPORT OF THE ACQUISITION STREAMLINING INITIATIVE

> You may not see alot of raging flames indicative of a streamlining inferno in the Navy yet, but watch out. We have been all over with our little matches, setting a spark just about everywhere. And I promise that our enthusiasm for this important initiative will hold out until you see the light of acquisition streamlining burning in the eyes of all in the Navy community.
>
> --G.C. Hoffmann
> Specification Control
> Advocate General of the Navy

Mr. Hoffmann's quote is indicative of the atmosphere permeating from the various Navy Specification Control Advocate's offices, although his prediction for future acceptance of ASI is still anyone's guess. In general, the Navy supports ASI 110%, starting with Mr. Hoffmann. DOD policy on ASI has been minutely examined and embellished by the Navy. Taking a cue from Deputy Secretary of Defense Taft's direction, the Navy has formulated and promulgated its "ASI Principles" and "ASI Plan of Action."

The Assistant Secretary of the Navy initially published his ASI principles in August of 1985--within ten months of the original Initiatives' debut. Although they were updated in the Assistant Secretary of the Navy's memorandum of 7 January 1987, they remain virtually unchanged. The Department of the Navy (DON) supports ASI principles to (ASECNAVMEMO, 1987, p. 1):

1. Tailor all specifications and standards to operational requirements:

   --By tailoring, focusing on avoiding the extraneous portions of a requirement is meant. This includes (Hoffmann, 1986, p. 2-3)--

   a. Rewriting. When a requirement is otherwise acceptable, it may be referenced and expanded to more accurately explain the application.

   b. Extracting. When only a part of a requirement is pertinent, only that part is referenced in the procurement package.

   c. Elimination. When a requirement is too lengthy to extract, it may be referenced with the unnecessary parts specifically eliminated.

   d. Elimination of Tiering/Chain-Referencing. MILSPECS/STDS invoke requirements as part of their text; these requirements then reference more requirements. . . this can be controlled by invoking only those references listed in the basic requirement (first tier), while citing the remaining tiers (second tier on down) for guidance only, OR by rewriting/extracting/eliminating, use only the necessary portion of each referenced requirement.

   e. Use Industry Specifications/Standards.

2. Apply pertinent requirements, specifications, and standards. . .

   * Overapplication--invoking extraneous requirements.

   * Underapplication--neglecting essential requirements, leading to sub-optimal program performance.

3. Specify performance requirements versus how-to requirements.

   --Dictating to a contractor "how-to" perform can constrain his ability to "apply advanced, technologically innovative, and cost-effective solutions to the functional and operational performance of weapon systems and hardware" (Hoffmann, 1986, p. 2-2).

4. Use Non-Developmental Items (NDI).

   --Utilizing already developed, available, and compatible components/material minimizes the need for costly research and development.

5. Ensure industry participation in program development, design, and solicitation preparation.

   --This allows the Navy to capitalize on state-of-the-art technologies.

6. Timing.

   --keep options open in invoking requirements; invoke only at the latest possible time in the design/development process. Know what is absolutely required, and when to cite it is <u>as</u> required, or just for guidance.

7. Maintain disciplined risk management.

   --Inherent in ASI, is increased risk assumption by the Navy.

   --There are several ways to handle this increased risk (Hoffmann, 1986, p. 2-6):

     * Risk Avoidance. Identify/analyze alternatives and select the least risky alternative.

     * Risk Transfer. Impose a greater portion of the risk on the contractor via warranties, fixed price type contracts.

     * Risk Assumption. Primary technique of streamlining. Increased risk is acknowledged and assumed by the Navy.

8. Conduct all acquisition programs as "good business;" use common sense.

The 1987 version of the Assistant Secretary of the Navy's Plan of Action to carry out these ASI principles is strongly reminiscent of his Plan of Action delineated in 1985. . .

1. In each Hardware Systems Command (HSC), appoint dedicated personnel to review, challenge contractual documents for excessive, redundant requirements/ specifications/standards. Designate an Acquisition Streamlining Advocate at each HSC.

2. Require certification by the HSC Advocate that all acquisition categories I, II, III requirements have been tailored. Certification includes (Hoffmann, 1986, p. 1-3):

   --prior to FSD, that the development specifications (including the CDRL) have been reviewed and certified that they have been tailored to operational requirements.

   --must certify that hardware/software development reflects maximum commonality.

   --NDI has been utilized in the most feasible and cost effective manner.

3. HSCs must conduct formal training for all levels of employees, from top management to the working level. Must train a minimum of 960 personnel in 1987.

4. HSCs must institute formal recognition programs for those personnel who make positive contributions in reducing non-cost-effective contract requirements.

5. HSCs must institute formal procedures where prime contractors become aware of ASI and use those principles in their business with their vendors.

6. HSCs must maintain dedicated funding for its ASI efforts.

7. HSCs must conduct an annual flag-level review of its progress in promoting ASI. Review will be chaired by the Assistant Secretary of the Navy (Shipbuilding and Logistics) with the Specification Control Advocate General of the Navy in attendance.

The aforementioned certification process is an integral part of the ASI program and worthy of singular mention; it is the stop-valve through which all programs must pass before final approval. Figure 3 visually depicts the

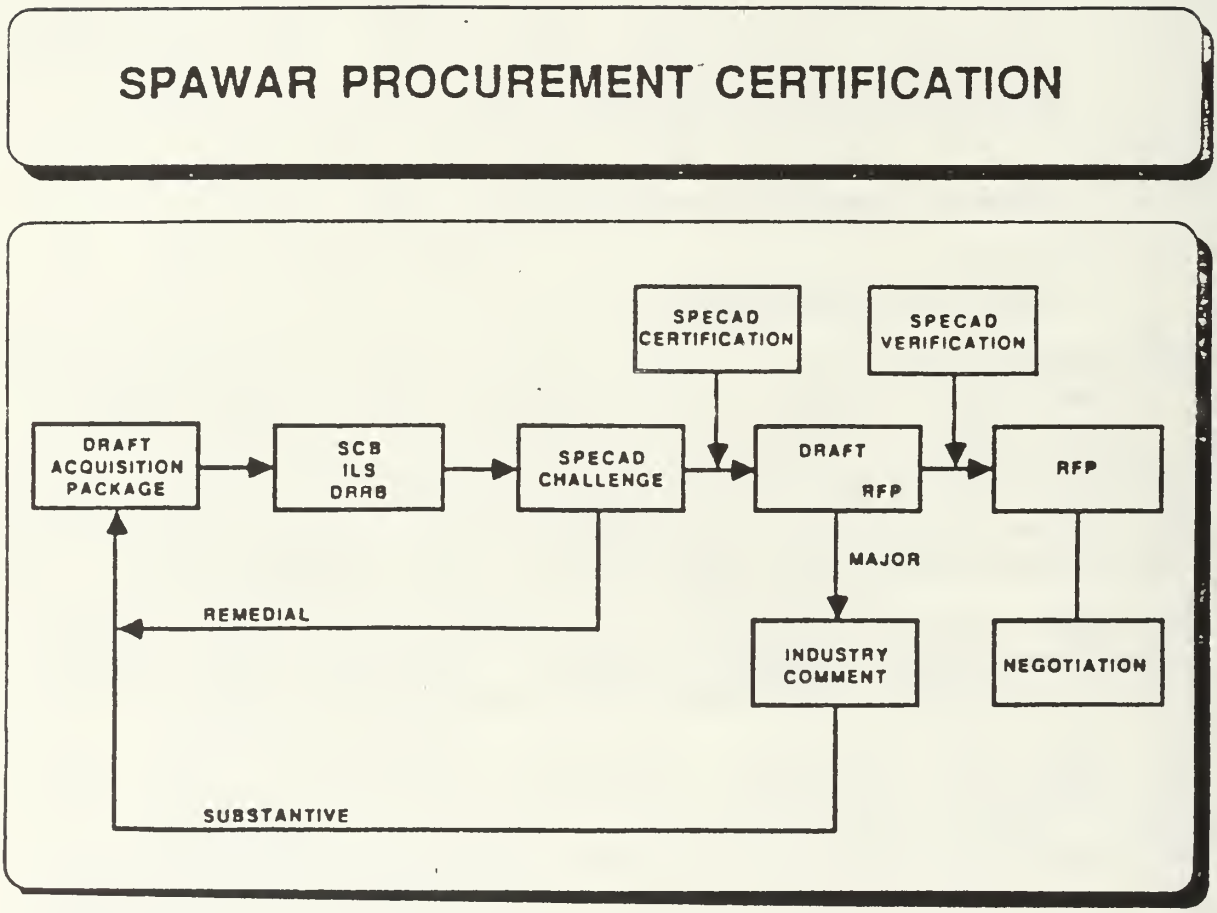

Figure 3. SPAWAR Procurement Certification

importance of certification to a program and the implications if certification is refused. Thus, the HSC's Specification Control Advocate has much responsibility and authority. He not only garners support for ASI within his HSC, develops Command policy vis-a-vis ASI, and designs adequate training for all personnel levels, but also, in the final analysis, approves programs.

A. ASI AT THE SPACE AND NAVAL WARFARE SYSTEMS COMMAND

The Space and Naval Warfare Systems Command (SPAWAR) is the major developer AND customer for the Navy's electronic hardware. Its program office develop the technical acquisition documents which describe end items to be supplied in government contracts (Woods, 1987, p. 4). It is the engineers, logisticians, and contracting officers of each program office who are tasked with the actual streamlining effort. SPAWAR does have a vigorous streamlining program, especially in the training arena. The Commanding Officer of this HSC set forth his policy concerning ASI in a 10 February 1986 memorandum: an aggressive ASI program is to be pursued by all program managers, engineers, logisticians, and contractors with final program certification required by the Specification Control Advocate (SPECAD).

Once this general, clear-cut guidance was published, it was only natural to expect that, point for point, SPAWAR acquiesced to DOD direction. . .use commercial specifications

(NDI) as often as possible, avoid chain-referencing, use draft RFPs, utilize early industry involvement, review requirements, establish and convene a General Specification Requirements Executive Board to define specifications and requirements, require program certification by the SPECAD. . . . As previously alluded, however, the training at SPAWAR deserves special mention.

SPAWAR has a written, basic, formal training program that is applicable to all acquisition personnel. There is also a 28-minute videotaped lecture on ASI available for the field level laboratories, although it is the basic training program that will be discussed here. This training program is comprised of three modules:

1. First Module

   The basic seminar for top- to mid-level management which devotes one hour in covering ASI principles, SPAWAR policy regarding ASI, general techniques in streamlining acquisition packages, and SPECAD responsibilities, especially the certification duty. Students are apprised of the importance of ASI, especially in view of current and predicted DOD budget cuts by Congress.

2. Second Module

   A three hour class for the "working-level" personnel. Material in Module One is covered as well as emphasis

on use of general specifications, what is chain-referencing/specification tiering, translation of requirements to specifications, and tailoring of specifications/Statements of Work (SOWs)/CDRLs. Exercises are given to the students to detect "how-to" terminology.

3. Third Module

The working-level students from the Second Module are given an actual acquisition package. They are then divided into groups of five and directed to streamline a portion of the package. After an hour and a half of group debate and discussion, findings are presented to the entire class.

There are approximately 320 engineers and logisticians in the program offices who received this streamlining training, plus about 320 top- to mid-level managers (Woods, 1987, pp. 4/5). The SPAWAR Specification Control Advocate personally conducted all training thus far (approximately 500 employees) although training from this point on will be conducted by Mr. Hoffmann's office, probably on a quarterly basis.

In addition to formal, classroom training, two semi-automated training aids have been developed for the program engineers and logisticians. The first is "Project Wise," a semi-automated system for accepting logistics and "ilities"

(i.e., producibility, survivability, repairability, maintainability. . .) inputs and tailoring specifications, SOWs, CDRLs. Project Wise uses standard word processing software compatible for use on the various personal computers found in the SPAWAR program offices. Along with floppy discs, a Project Wise guide has been developed so that the average program manager, engineer, or logistician can, with minimum guidance, develop a "strawman" SOW, CDRL, specifications/standards for either the FSD or Production phase (Project Wise Manual, 1986, p. i). These "strawmen" should facilitate preparation of actual specifications/SOWs/ CDRLs for a typical procurement with little deviation. In other words, Project Wise is a means of standardizing a typical SPAWAR acquisition. Project Wise discusses both optimum requirements inherent with large complex acquisition and minimum requirements associated with simpler buys.

The second aid, an "Expert System," is still in the development phase, and only recently received funding. The basic task of this system is to query engineers/logisticians (via computer keyboard) regarding program phase, status, etc., and to lead them to appropriate streamlining considerations based on their answers to a pre-programmed series of questions. The implementation and success achieved by this expert system, is of course, still in the future.

B. CONCLUSIONS

SPAWAR, it appears, thoroughly embraced the tenets of ASI. As with all fledgling projects, the emphasis thus far has been in enlightening and training those employees who are involved in the acquisition evolution. But what is the actual financial impact? How has it been achieved? The next two chapters deal with just that.

III. SPACE AND NAVAL WARFARE SYSTEMS COMMAND THE MARINE PROJECTS

> However, one of the troubles with a concept such as tailoring is that, while it sounds good in principle, every application requires someone to make a decision.
>
> --Vadney, "Methods of Tailoring Specifications and Standards"

The Space and Naval Warfare Systems Command (SPAWAR) encompasses not only Navy program offices, but also those of the U.S. Marine Corps. These Marine program offices are some of the most vigorously run, and have, up to this point, been the most demonstrative supporters of ASI. Hence, this chapter will deal more in-depth with the streamlining efforts of two top Marine programs, than with their counterparts, the Navy programs, which will be considered in Chapter IV. The Marine Corps programs which will be reviewed are the Tactical Air Operations Central project (TAOC) and the Advanced Tactical Air Command Central program (ATACC).

A. TACTICAL AIR OPERATIONS CENTRAL (TAOC)

The TAOC program office is responsible for the development of a modularized, transportable, automated Air Command and Control system. This third generation equipment

developed by Litton Data Systems will be capable of controlling and coordinating the employment of a full range of air defense weapons, inter alia, interceptors and surface-to-air missiles. Figure 4 depicts the coordination capabilities of the basic TAOC system element: the Tactical Air Operations Module (TAOM). These TAOMs weigh approximately 15,000 pounds each, and are transportable via fixed or rotary wing aircraft, ship, rail, or truck; at present, a Tactical Air Operations Central is comprised of five TAOMs. Each TAOM has the capability for (following information is gleaned from various program office public information material):

1. System Initialization

   Provides for data entry generated by search radar of IFF (Identify Friend of Foe) equipment.

2. Surveillance

   Receives and processes track information, orders, and status data received via digital data links from other command and control agencies, or from controlled weapon systems, i.e., F14 aircraft.

3. Weapons Control

   Processes inputs from operator consoles for entry, deletion, or modification for transmission outside the TAOM. Performs automatic tracking, identification, threat evaluation, and weapon selection. As the

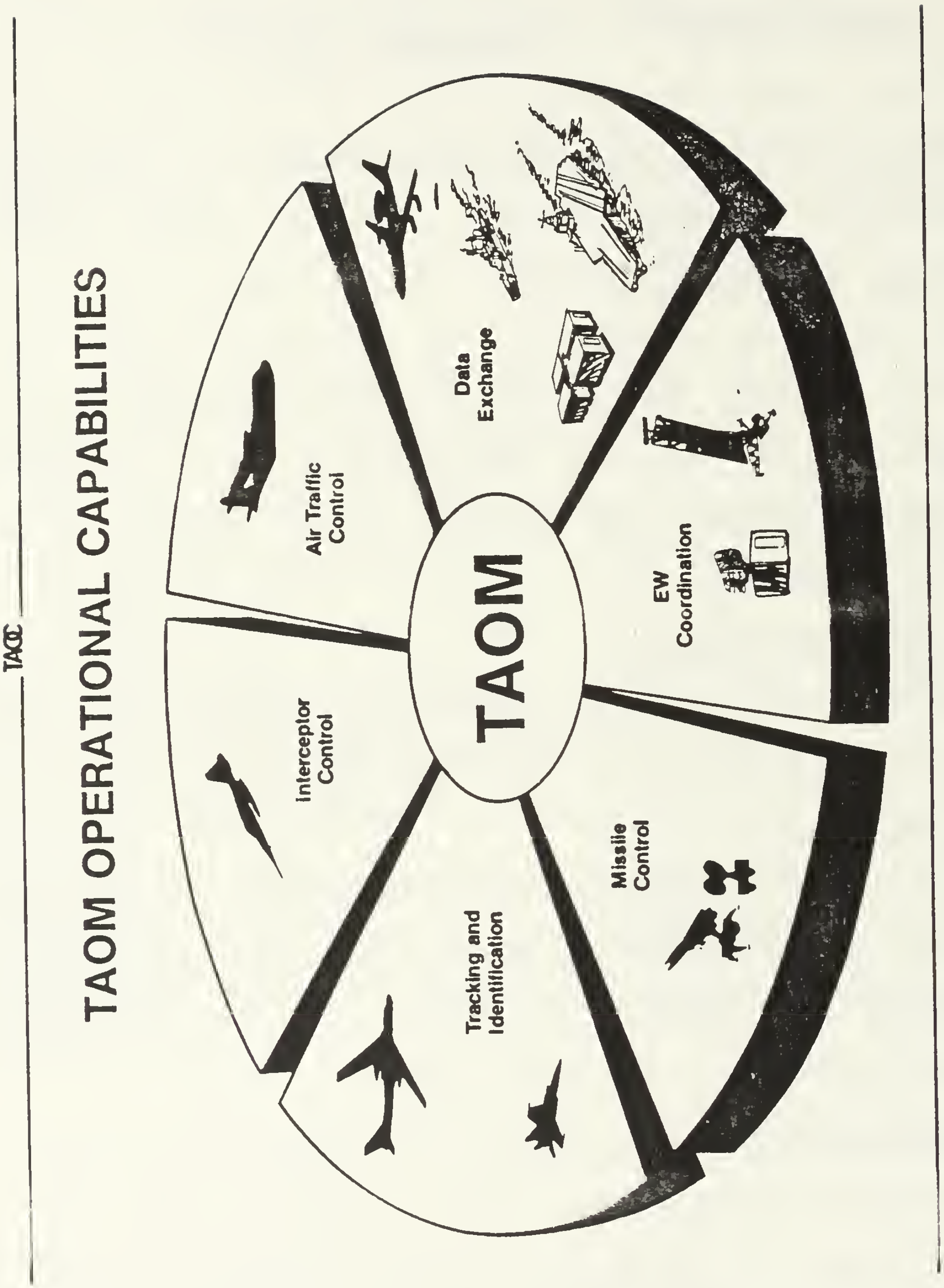

Figure 4. TAOM Operational Capabilities

mission of the Tactical Air Operations Central is anti-air warfare, TAOMs must have control over the weapon systems available to the Marine Air Ground Task Force.

4. Air Traffic Control

Provides capability of displaying the tactical air situation on consoles. TAOMs are capable of:

--calculating data for waypoint vectoring and rendezvous of friendly aircraft;

--detecting potential hazards to flight safety posed by restricted areas and gun-target lines;

--decoding special IFF codes;

--generating controller alerts when hazards to flight safety are detected.

5. Electronic Warfare

Interaction of TAOM and system radar jam-strobe data.

Each TAOM has electronic/automatic data processing equipment indicative of the kinds of equipment with which a typical program office at SPAWAR deals. Such equipment includes:

a. Radar Interface units

* processes inputs from radar/IFF sets

b. Computer Units

* performs software oriented functions

c. Mass Memory Unit

* provides non-volatile storage for program data

d. Operator Console Units

* provides operators with real-time situation and auxiliary display

e. Voice Communications Access Unit

* provides intra- and inter-communication ability

f. Internal Radar Units

* UHF, VHF, HF radios

g. Digital Communication Unit

* provides for transmission/reception of digital data

h. Printer

* provides hard copy of data.

All above-listed equipment in this particular system calls for operator level repair and maintenance. A representative TAOC/TAOM setup can be found in Figure 5.

The program office itself is a medium-sized one, with six engineers (including the Program Manager, a Marine Corps Colonel), and one logistician; in addition there are seven contract support personnel assigned. The TAOC is anticipated to be a $2 billion program with Litton Industries, Technical Data Division, and is on the verge of the Production phase. The program's current contract life is seven years (i.e., from Production to the brink of Deployment); the first three years will be using a Fixed Price Incentive Contract, and the last four years will use a Firm Fixed Price Contract.

At present, TAOC claims an approximately $103 million cost avoidance in the Production contract due to

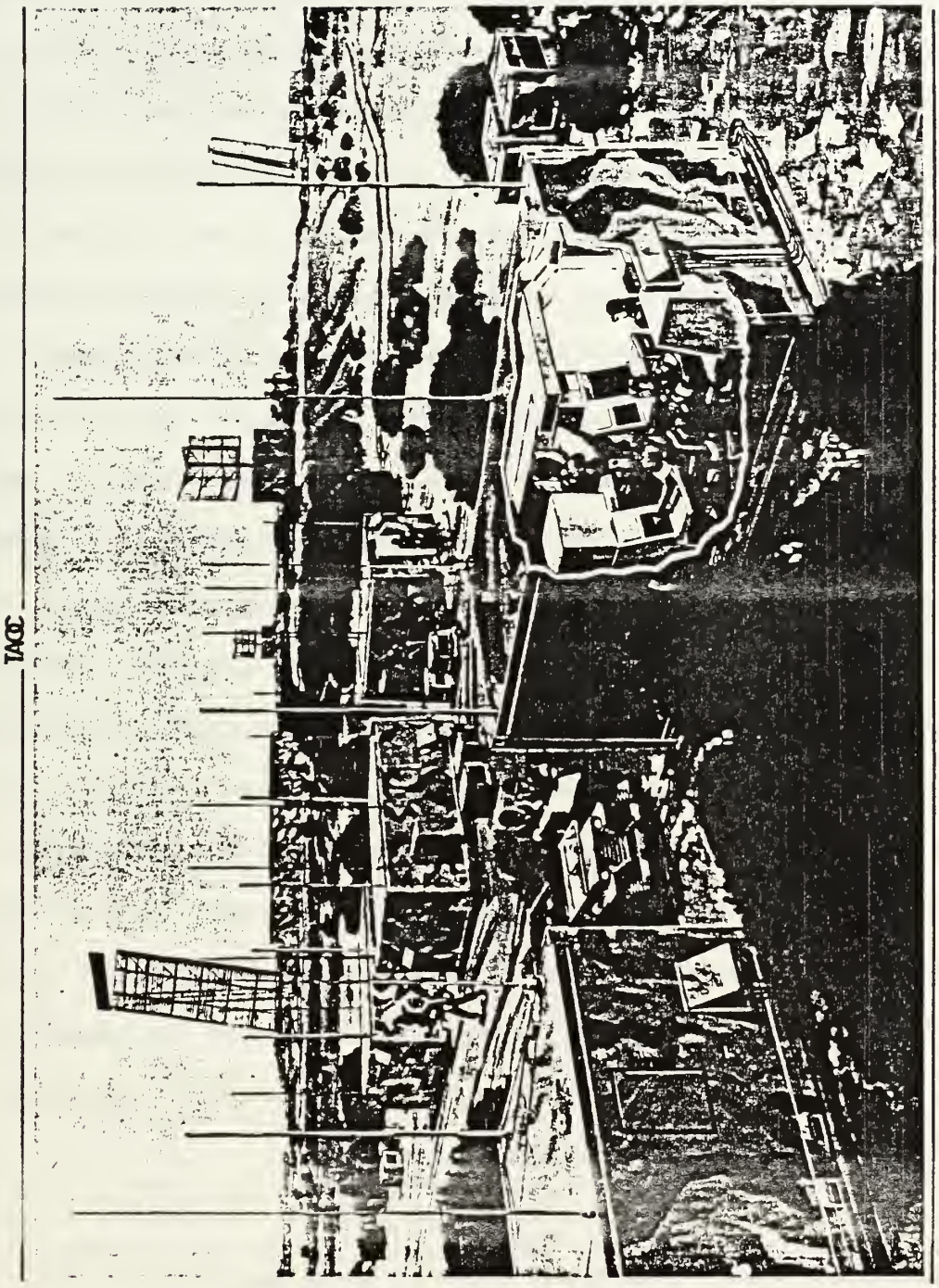

Figure 5. TAOC /TAOM Setup

streamlining. This figure has been approved and certified by the SPAWAR Specification Control Advocate. This cost avoidance was achieved in a number of ways, all of which are to be found as basic principles of ASI.

An initial RFP was devised with Production baseline target prices as of June 1986. The RFP contained separate Statements of Work (SOWs) for the Marine Corps and the Air Force. 196 Marine Corps Contract Data Requirements (CDRLs) were cited, plus 242 Air Force CDRLs (total: 438 CDRLs; only 11 of these were tailored (2.5%)). As with the SOWs, entirely separate specifications were cited for the Marine Corps and Air Force, despite a 90% commonality factor. Originally, too, all testing and technical manuals were separate between the Marine Corps and Air Force. Thus, it should not be startling to discover a very expensive program with Production baseline scope increase target prices totaling $392,000,000 (COMSPAWARSYSCOM 003-12/128, 1986).

However, ASI came on the scene, forcing the program manager to rethink strategy and taskings. Hence, by October 1986, a modified RFP for the baseline scope increases was ready, calling for only $289,500,000 in expenditures. It is here the cost avoidance can be found; by utilizing some common sense and forcing the contractor to assume more of the project risk, $103 million in program costs have been avoided (COMSPAWARSYSCOM 003-12/128, 1986).

Basically, this avoidance was achieved through elimination of testing, documentation, and training materials. The SOWs and Production contract specifications were merged; interoperability became a key word. The actual numbers of CDRLs were reduced, combined, and revised; the Marine Corps now cited only 26 unique CDRLs, the Air Force now cited only 71 unique CDRLs, and 99 CDRLs were found to be in common. Thus, the total number of CDRLs was decreased from a total of 438 to 196--and of the 196, 55 CDRLs were tailored (28%).

First Article and Quality Conformance Testing was combined and will be shared between the Marine Corps and Air Force. Litton Industries was required to furnish their equipment to actually perform testing, thereby assuming some of the program risk; for example, Litton dollars bought new computer hardware to test the program's anticipated new software. Finally, testing manuals--once conceived of as separate Marine Corps/Air Force training aids--have been combined. All in all, it appears a little more common sense and engineering know-how will mean saving "big bucks" for the taxpayers.

B. ADVANCED TACTICAL AIR COMMAND CENTRAL (ATACC)

The Advanced Tactical Air Command Central represents the equipment hardware and computer software that provides the Marine Tactical Air Command with a mobile facility in which

to plan and direct air battles. ATACC provides for communication with other systems as well as being able to process and display data (text and graphic) on screen display units. ATACC consists of three subordinate control agencies:

1. Tactical Air Operations Center (TAOC)

   * responsible for air defense operations (as previously discussed)

2. Direct Air Support Center

   * responsible for air support operations

3. Marine Air Traffic Control and Landing Systems

   * responsible for terminal air traffic control operations

Figure 6 displays a typical ATACC and its satellites.

ATACC's mission is as follows (System Specifications, 1986, pp. 23-25):

1. Air Defense and Support Coordination

   --provides the facilities in which the Tactical Air Command can direct battle and defense.

2. Air Tasking Order Development

   --provides facilities and required automation for Tactical Air Command to promulgate direction in message format.

3. Asset Management

   --provides facilities for Tactical Air Command to manage all aircraft in the amphibious objectives area.

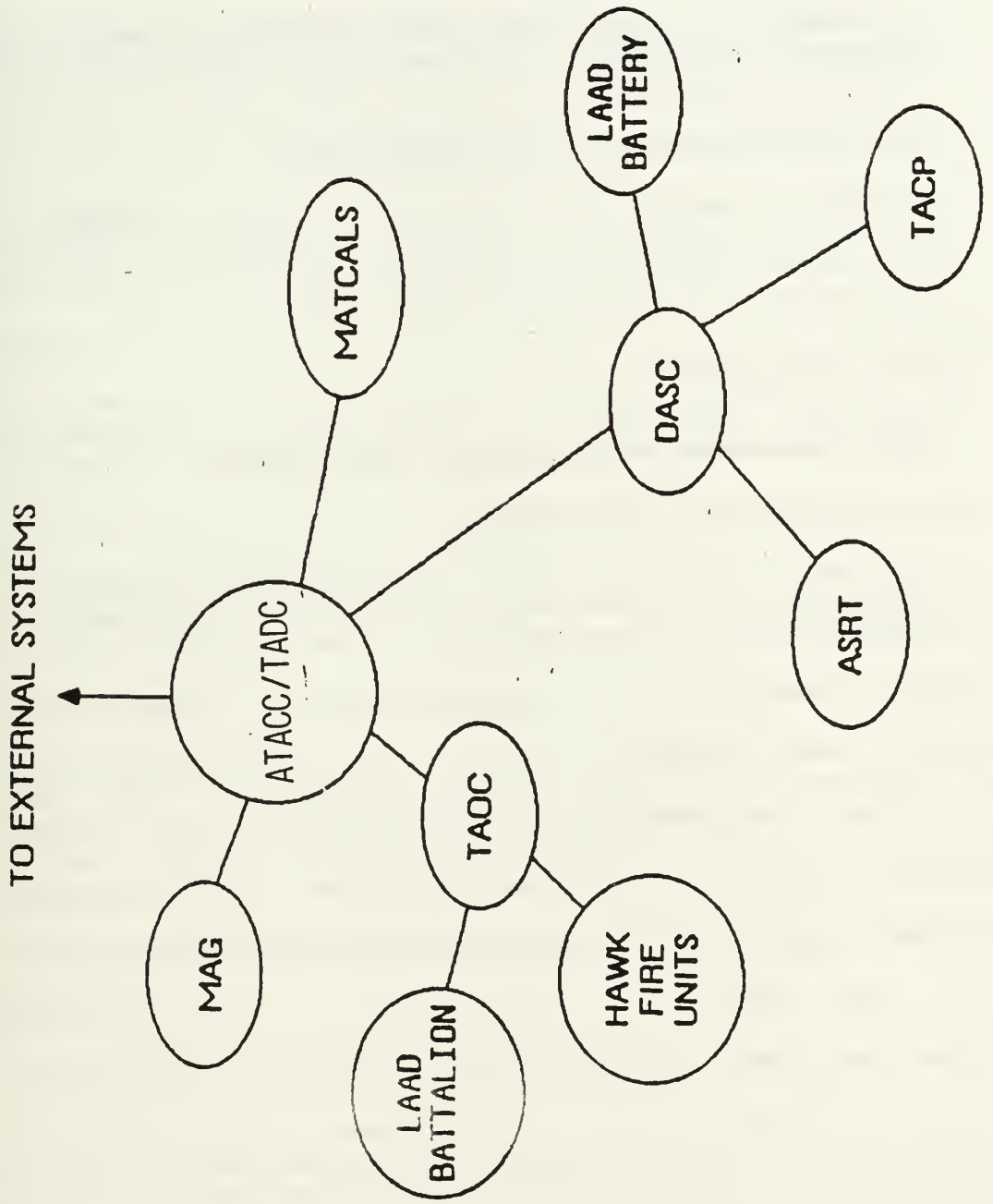

Figure 6. Communication Lines, Typical Marine Air Command and Control System

4. Alert Conditions

--provides facilities for Tactical Air Command to disseminate air defense alert and weapons release conditions.

5. Electronic Emission Control and Electronic Warfare

--provides facilities for Tactical Air Command to prescribe Electronic Emission Control and Electronic Warfare procedures.

6. Information Gathering and Promulgation

--provides facilities for Tactical Air Command to maintain complete, up-to-date information of the air and ground combat situations; both efforts can be advised on the actions of the other.

7. Search and Rescue

--provides facilities for Tactical Air Command to coordinate Search and Rescue operations.

8. Logistic Support Coordination

--provides facilities for Tactical Air Command to coordinate fixed and rotary wing logistical support operations.

An actual ATACC facility is comprised of four 8x8x20 foot shelters, each weighing about 10,000 pounds and transportable via aircraft, ship, rail, or truck. Maintenance concept is for intermediate and organizational level repair. Each of the four shelters contain operator consoles, and table top work stations, complete with communications units, data processors, display, and radios.

The ATACC program orrice is a very small one, consisting of one individual, a Marine Major, who is the PM, Engineer, Logistician; the program does enjoy contract support

services (3-10 individuals). This is an approximately $100 million program whose acquisition cycle does not follow the classic pattern. Currently, the program is in the three year Full Scale Integration Testing phase which corresponds to FSD. The Production phase will ensue; the contract now in use will cover the Integration and Production phases. Thus far, ATACC claims between $6 - $16 million in cost avoidances and between $10 - $23 million in cost savings in its Fixed Price contract (COMSPAWARSYSCOM 003-12/128, 1986, enclosure 1, page ii). The vast majority of these savings stems from dollars avoided and saved by investing in Non-Developmental Items (NDI) vis-a-vis hardware and in Integrated Logistics Support (ILS).

1. Cost Avoidances.

ATACC's approach as per System Specifications is (p. 19):

> To replace currently fielded system with Non-Developmental Items (NDI) to include both hardware, software, and firmware of mature production ready design, specifically modified items, or specially designed items in that order of priority.

The System Specifications reiterates exactly what NDI are acceptable. . .

--standard military items already in the government's inventory

--commercial NDI already in the government's inventory

--commercial NDI

--modified commercial NDI

--specifically designed or modified items

In a letter written to the Commandant of the Marine Corps, the use of NDI was delineated (COMSPAWARSYSCOM 70-41A/190, 1986, enclosure 2, p. 1):

a. System Hardware

*Commercial specifications will be acceptable in lieu of the Critical Item Production Function Specification (MILSTD 490A and 483).

*Existing drawings to best commercial practices are acceptable to support maintenance and provisioning efforts.

*Human factors engineering (i.e., personal computer keyboard layouts) are not required for NDI.

*Reliability engineering is not required for NDI.

*Level of Repair Analysis (LORA) will not be performed on NDI; maintenance approach used by the equipment builder is adequate to meet ATACC needs.

*Submission of the Provisioning Short Form will satisfy the provisioning requirements for NDI integration into the Marine Corps supply/maintenance system.

*Ground Support Equipment Requirement Documents are not required with NDI.

*Test Requirements Documents are not required with NDI; the equipment manufacturer's maintenance approach is adequate to meet ATACC needs.

*Test Program Sets are not required with NDI; the repair approach of the equipment manufacturer and the test equipment recommended for the NDI is adequate to meet ATACC needs.

*Commercial Operations and Maintenance Manuals are satisfactory for NDI hardware and will be used.

*A Parts Control Program for NDI is not required.

*Flowdown requirements for Quality Assurance (QA) is not applicable to NDI.

*Qualitative and Quantitative Personnel Requirements Information is not required for ATACC.

b. Software

*Any computer program language is acceptable for use for ATACC.

*Commercial software technical manuals are acceptable for use for ATACC.

*QA requirements for software itself are not necessary for NDI software, although QA requirements for software integration will apply.

c. Rights to Technical Data

*Limited rights to technical data are applicable; commercial data will support NDI.

2. Cost Savings.

The $10 - $23 million estimated as cost savings is based on use of NDI on the non-recurring cost type items involving Integrated Logistics Support. Non-recurring costs are estimated to be about $50 - $60 million; the ATACC Program Manager estimates use of NDI to be about 1/3 this non-recurring cost. The assumptions the PM for ATACC used in going with NDI in the vital ILS approach were (COMSPAWARSYSCOM 70-41A/190, 1986, enclosure 1, p. 1):

a. System performance is a mandatory requirement, and will not be modified to accommodate NDI.

b. Where possible, use existing military/commercial equipment, software, and associated documentation.

c. Tailor MILSPECS/STDS for use of NDI; impose full set of MILSPECS/STDS for equipment and software to be developed.

d. Require full ILS performance for developed equipment; tailor ILS requirements for NDI.

e. Modifications to existing equipment hardware, software, firmware (programming that is built into the hardware) will be documented consistent with existing documentation.

f. No new military skills or training will be required for the operation or maintenance of ATACC.

C. CONCLUSIONS

In summary, TAOC has implemented aspects of ASI by utilizing common sense--since TAOC enjoys a great degree of commonality with the Air Force's Modular Control Equipment System, much of the testing, documentation, and training has been merged. ATACC, on the other hand, claims to be an "NDI Program." Although directed by higher authority, ATACC's PM did successfully implement ASI through extensive use of commercial, off-the-shelf products.

It is obvious, then, when reviewing these two programs, that someone has made a decision. The "someone" is the pertinent PM, and certainly the "decision" made is to implement ASI. Although these cost savings/avoidances do indeed appear promising, they are in fact estimates, indicators of possible savings. Bottom-line figures will not appear until the bids are received back to TAOC and ATACC.

IV. SPACE AND NAVAL WARFARE SYSTEMS COMMAND THE NAVY PROJECTS

When every requirement is priority, No requirement is priority.

--comment from the Second National Conference on Acquisition Streamlining

The Navy side of the SPAWAR house claims cost savings/ avoidances due to ASi as well, but on a more modest scale. The principle programs cited are the Afloat Correlation Systems (ACS), the Extra High Frequency Satellite Communication Terminal project (EHFSATCOM), and the Relocatable Over-the-Horizon Radar (ROTHR). A fledgling program, the Ship Launched Electronic Decoy (SLED) is only in the embryonic stages of implementing ASI, but these efforts will be addressed along with the more mature programs.

It must be noted here that information concerning these programs originates from just one source: a letter written by the Commanding Officer of SPAWAR to the Specification Control Advocate General of the Navy, Mr. Hoffmann. As Mr. Hoffmann requested an update of SPAWAR's efforts and results for implementing ASI, data was duly collected and sent up the chain-of-command. This data does not, however, exist anywhere else at this time.

A. AFLOAT CORRELATION SYSTEM (ACS)

ACS's objective is, "To provide an afloat capability for the reception, evaluation, storage, dissemination of sensor and Ocean Surveillance Product data originating from various remote sensors and Navy Command and Control nodes." (COMSPAWARSYSCOM 003-12/128, 1986, ACS enclosure, p. 1). In other words, ACS coordinates and integrates offboard tactical data with own ships tactical data to provide a "master data-base" for decision making. ACS is currently in the FSD acquisition phase; a Cost Plus Award Fee contract was awarded to Martin-Marietta Baltimore Aerospace following a competitive Concept Definition Phase (CDP). This contract type will shift to a Fixed Price Incentive Fee contract upon establishment of final design during the Critical Design Review portion of FSD. The acquisition strategy practiced by the PM is on emphasizing Design-to-Cost and Preplanned Product Improvement (P3I) which will facilitate future requirements as ACS's mission need evolves. This program office consists of about five members at any one time--one military PM (Navy Commander), an Engineer, Logistician, Program Analyst, and Interface Designer (a Navy Lieutenant). The office does enjoy contractor support services. Thus far, ACS claims approximately $1.6 million in cost avoidances due to ASI (COMSPAWARSYSCOM 003-12/128, 1986, enclosure 1, p. ii).

Although ACS utilized many of the ASI concepts, the cited cost avoidance stems primarily from an abridgment of the formal Demonstration and Validation (D&V) acquisition phase. Utilizing a previously fielded system-the Flag Data Display System, which is the "prototype" ACS--the program office was able to substitute Development Testing for the very long and complex Operational and Technical Evaluation evolutions. Hence, the need for a formal, lengthy, D&V phase was negated. In addition, the expensive Logistics Support Analysis (LSA) necessitated by D&V was curtailed; only nine of the 15 tasks were called out and were further tailored for ACS requirements.

A second area that resulted in cost avoidances was in the software "capture"--approximately 25%-30% of the software being reusable from other Navy systems (COMSPAWARSYSCOM 003-12/28, 1986, ACS enclosure, p. 3)--and by the use of a top-down software development, implementation, and test approach. Under this "Build Approach," the three steps of software design, coding, testing will be done in one "build" increment, with the second, third, etc., increments being "built" in the same way. Advantages such as these will ensue by using this approach (COMSPAWARSYSCOM 003-12/128, 1986, ACS enclosure, p. 6):

--a minimum schedule at low risk.

--early progress visibility due to the concurrent "builds."

--minimum requirements since each "build" provides input for the next build.

--compatibility of the software implementation tasks with other system development tasks.

--high-level testing of critical systems functions and all man-machine interface functions.

Finally, Contract Data Requirements Lists (CDRLs) are reviewed and streamlined whenever possible. For example:

--Computer Program Test specification CDRLs will be combined with their associated procedure CDRLs (this procedure will be followed for all testing CDRLs).

--CDRL revisions will occur only when required.

Additional noteworthy areas of ASI application are in the tailored cost and schedule reporting requirements, and waived format requirements (i.e., to allow use of contractor format or other "captured" system's format).

It can be seen that ACS has been successful in its streamlining efforts, primarily, thus far, from a shortening of the costly D&V acquisition phase. Additional success can be claimed from implementing the principles of ASI.

B. EXTRA HIGH FREQUENCY SATELLITE COMMUNICATION TERMINALS (EHFSATCOM)

The objective of EHFSATCOM's program office is to develop and deploy Extra High Frequency Satellite Communications terminals on board selected ships,

submarines, and shore facilities. Each terminal is to provide the Fleet a reliable, jam-resistant, low-intercept probability communications system in the 1990's. EHFSATCOM is the Navy section of what some say is the number one communications project in DOD--the Military Strategic and Relay Satellite (MILSTAR), headed by the U.S. Air Force. MILSTAR, a billion(s) dollar project, and said to be the "ultimate" in satellite communications, has a fielding date in the mid-1990's.

The EHFSATCOM program office is comprised of eight individuals; two military and six civilians. The civilian employees hold the position of PM (GM15), Acquisition Manager, Data Manager, Software Manager, Installation Manager, and Engineer. The Deputy Program Manager is a Navy Commander and the System's Manager is a Lieutenant Commander. EHFSATCOM does utilize contract support services personnel in the engineering and logistics arenas. The acquisition strategy practiced by the PM follows a 3-2-1 approach--three contractors in D&V, two contractors in FSD, and one contractor in Production. All contracts are awarded on a competitive basis. The program is still in FSD, although the PM is currently in the process of selecting a single contractor to complete this phase and move into Production. Cost savings due to ASI are estimated to be about $1 million per platform, for a total of $5 million (five platforms) (Director, EHFSATCOM Terminals Division memo, 1986, p. i).

Initially, two draft Production RFPs were submitted to industry for review in an attempt to keep the acquisition package process within a four-month time-frame (COMSPAWAR-SYSCOM 003-12/128, 1986, EHFSATCOM enclosure, p. 1). These draft RFPs were most beneficial in keeping errors and clarification questions to a minimum. A Firm Fixed Price contract with two award provisions resulted.

As per the EHFSATCOM Terminals Division Director's memorandum to the SPAWAR Specification Control Advocate of 9 December 1986, the following areas were successfully streamlined under ASI:

1. FSD Specifications

   --relaxed specified size requirements to avoid technical risk and cost impact.

2. FSD Statement of Work

   --allowed contractor format and revisions to allow easy interface within their scheduled tracking process.

3. FSD/Production Specifications

   --use of NDI: allowed use of shock absorbers so that commercially available equipment could be used versus MILSPEC/STD items.

   --use of NDI: used 60 herz cycle power commonality for a common design.

   --use of NDI: used U.S. Air Force calibration specifications commonality.

   --tailored the vibration test requirements to coincide more closely to that of the shipboard environment.

4. FSD/Production Statement of Work

   --cost reporting not required.

   --tailored LSA to EHFSATCOM requirements.

--allowed contractor Configuration Management tracking versus requiring governmental Configuration Management tracking.

5. FSD Satellite Simulator Specifications

--tailored to meet laboratory environment versus MILSPECS/STDS.

6. Submarine Reportback Processor Unit

--tailored to meet laboratory environment versus MILSPECS/STDS.

--tailored to meet shore environment only.

7. Training Simulator Specifications

--tailored to meet shore environment only.

Over time, the efforts to streamline EHFSATCOM represent real savings. Although ASI came along about mid-way through FSD, its principles have, nevertheless, been applied to the tail-end of FSD and Production phases. This office has claimed savings as a result.

C. RELOCATABLE OVER-THE-HORIZON RADAR (ROTHR)

The ROTHR system is designed to pass surveillance tracking information received from aircraft and ships to the Navy's Ocean Surveillance Information System (OSIS). OSIS in turn combines ROTHR-gathered information with information gleaned from other sources to provide an "Ocean Surveillance Product" to the Fleet in support of the tactical decision-making evolution. This program is currently in FSD. The ROTHR business strategy was to employ a competitively

awarded Cost-Plus-Award-Fee (CPAF) type contract. This was considered the most pertinent type contract to award as ROTHR by-passed the advanced D&V phase, plunging directly into FSD; CPAF ensures the contractor assumes a goodly portion of the risk inherent in such actions. The ROTHR program office is made up of 14 employees, five of which are military. The engineering and logistics functions are manned by civilians, while the military personnel hold the PM, Deputy PM, Test and Evaluation, and Training type positions. As with all the other programs, ROTHR utilizes contract support service personnel. Currently, ROTHR claims a cost savings due to ASI of $1.86 million (COMSPAWARSYSCOM 003-12/128, 1986, enclosure 1, p. ii).

The basic concept underlying ROTHR was to design and field an over-the-horizon radar system on an accelerated schedule due to the abundance of mature over-the-horizon radar technology available. The method used to achieve this underlying concept was to streamline the acquisition time by substituting a pre-FSD requirements definition phase for a formal advanced development phase, thereby entering FSD earlier than is usual. And in fact, ROTHR did save approximately two years in overall development time (COMSPAWARSYSCOM 003-12/128, 1986, ROTHR enclosure, p. 5). Draft RFPs were utilized to gather industry comments. A "Notational Design" package was included, informing industry

that system requirements could be achieved with available equipment and technology. Functional performance specifications were utilized at the system and sub-system level. Use of NDI was highly encouraged, as well as use of a "Tiger Team" approach (i.e., close cooperation between industry and the Navy to obtain a workable plan). Raytheon won the bid for the FSD phase, which comes to an end in 1988. At present, ROTHR is gearing up to award a Limited Production contract in FY89. This contract is leaning toward being a Firm Fixed Price contract.

There were, however, other areas in the ROTHR contract that experienced savings attributable to ASI. These areas are as follows (COMSPAWARSYSCOM 003-12/128, 1986, ROTHR enclosure, pp. 5-6):

1. Original performance specifications for the Back-scatter Sounder Subsystem required separate receiver antenna arrays for the Sounder System. The specifications were as modified,however, allowing the Sounder to share 28 of the radar antenna elements. Savings are estimated at approximately $200,000 per system.

2. The specification for the Ambient Noise Model was set in a "worst-case" environment, leading to an expensive and complex receiver sub-system design. A modification to the specification was made, however, relaxing the ambient noise requirement which is less costly, easier to maintain, and seldom will the receiver sub-system emit sounds in excess of ambient noise. Savings are estimated at approximately $1 million per system.

3. Environmental specifications required the radar transmitter power amplifiers to operate in ambient air temperatures of up to 135 degrees, Fahrenheit--again,

a "worst-case" specification scenario. The specification was relaxed to 120 degrees, Fahrenheit, thereby saving about $500,000 per system.

4. NDI was utilized for the vertical Ionospheric Sounder subsystem at a savings of approximately $200,000 per system.

5. Environmental specifications, once again, operating on a "worst-case" basis, called for receiving antennas to be operational and protected against lightning strikes of great magnitude. After deliberation, it was deemed more sensible to protect the antennas against the more frequent lower level lightning strikes and replace the antenna should it ever be struck with the higher level strikes. Cost Savings are estimated at $160,000 per system.

As can be seen, this office has successfully applied common sense to the ROTHR project. Use of NDI, elimination of the D&V acquisition phase, and modifying "worst-case" specifications into realistic ones are all examples of ASI in action.

D. CONCLUSIONS

The programs addressed thus far in this chapter were already into the acquisition cycle when ASI was published. They did, however, make attempts to comply with the directive with various degrees of success. Both ACS and ROTHR capitalized on existing technology; in each case, the formal D&V acquisition phase was curtailed, plunging the programs into FSD quicker than is usual. ROTHR continued to utilize streamlining techniques by advocating use of NDI, as

well as relaxing those ever "worst-case" environmental specifications. EHFSATCOM, however, used the whole gamut of ASI principles, relying most on use of NDI and tailoring requirements.

There are programs that are utilizing the principles of ASI, almost right from conception. An example of this type of program is SLED--the Ship Launched Electronic Decoy program. This Australian/American joint program is tasked with developing a new type of low-cost, expendable electronic decoy in the protection of ships. Starting right off following the principles of ASI, a pre-bidder's conference was held in March of 1985 to discuss the draft RFP package. In addition, the program intends to use such ASI tenets as NDI and tailoring throughout. Surely this--and the rest of the cases--are all promising cases in support of successful ASI implementation.

V. CONCLUSIONS

> DOD should not have to specify the management system for the contractor. If the contractor does not have a management system adequate to manage a program, he should not be given the contract.
>
> --Packard, 1973

Has the Navy and SPAWAR achieved dollar savings due to streamlining? The Secretary of the Navy, John Lehman, has certainly said the Navy has--over $1 billion in the first year of implementation (1985-1986). SPAWAR itself claimed an estimated $117.6 million savings due to cost avoidance and an estimated $29.86 million cost savings for inclusion in the Secretary of the Navy's Posture Statement to Congress, CY1986 (Chapter III and IV presented the breakdown of these figures). By either making a conscious decision to selectively apply pertinent requirements or advocating use of NDI/industry standards, it can be stated that streamlining has certainly been employed as an important part of the acquisition strategy at SPAWAR.

Mr. Hoffmann, the Specification Control Advocate General for the Navy, is currently working on DOD Handbook 248b--"Optimizing Contractual Requirements for Cost Effective Application in Defense Contracts"--which outlines indicators of a successfully streamlined program (pp. 6-1 and 6-2):

1. Strong support from all levels.

2. Technology is verified before Engineering Development (i.e., use of NDI).

3. Risk Reduction conducted (i.e., cost/performance analysis).

4. Funding Stability.

5. Schedule Priority.

6. Continuous user involvement.

It can be said that actions taken by SPAWAR to comply with ASI principles are indicative of a successful program as outlined above. In addition to compliance with the cost savings/avoidance criteria (selectively apply requirements and accelerated use of NDI), SPAWAR claimed, in its Semi-Annual Review of October 1986, other areas where ASI has been applied:

--Developed a "specification tree" to identify hidden referencing to the seventh tier level.

--245 specifications have so far been reviewed by the SPAWAR Standardization Branch. Of these, 45 have been cancelled (18%), 150 were significantly revised (61%), and 50 went through minor revision (21%).

--"Specification Control Boards" have been instituted at all SPAWAR laboratories.

--Draft specifications will be analyzed and discussed with industry to ensure maximum streamlining and acceptance.

--Established and convened a flag-level Executive Board for developing a common specification baseline.

--Implemented a formal, written streamlining policy for use at SPAWAR.

--Implemented a comprehensive command training program.

It is interesting to note, however, the only apparent area of controversy within SPAWAR vis-a-vis streamlining is in working-level employee acceptance of ASI. The SPAWAR Specification Control Advocate recently conducted a study to obtain verification of statistically significant ($p<=.05$) improvements in positive behavior toward ASI after the training addressed in Chapter II. "Positive behavior" was defined as improved worker belief, confidence, knowledge, and acceptance of ASI tenets. Upon completion of streamlining training, 165 managers and 229 working-level employees were asked to answer seminar and class evaluation sheets. Questions in the evaluation sheets were selected to cover a broad range; respondents were anonymous.

The manager's responses were as follows (Woods, 1987, p. 40):

TABLE 1

MANAGER'S RESPONSE TO QUESTION ON SUPPORT FOR ACQUISITION STREAMLINING

	YES	NO	SOMEWHAT
% of Respondents	85	0	15

The SPAWAR Specification Control Advocate concluded that ASI training was successful: managers at SPAWAR were ASI "believers."

The perception of working-level employees, however, in regards to support from management in implementing ASI, was entirely different (Woods, 1987, p. 41):

TABLE 2

WORKING-LEVEL EMPLOYEE RESPONSE TO QUESTION ON EXPECTATION OF SUPERVISORY SUPPORT IN IMPLEMENTING THE ACQUISITION STREAMLINING INITIATIVE

	% YES	% NO	% SOMEWHAT
WORKER EXPECTATION	62	7	31

chi-square = 11.824

At the alpha = .05 level, the chi-square value of 11.824 is greater than the 5.991 required. Thus, one can infer a lower level of worker acceptance/belief in managerial support if ASI is implemented, than those managers originally perceived; it is concluded that better communication between managers and employees is needed (Woods, 1987, p. 41).

Although working-level employees need further convincing, can it be determined that ASI will actually be effective downstream? Two areas yet to be discussed seem to indicate an affirmative answer.

1. Industry Support /Assistance in Implementing ASI.

Technical support and cooperation from industry at large in making the streamlining effort work is practically

paramount. Although not all companies are known to be ASI promoters, SPAWAR maintains a good government-contractor atmosphere of cooperation. As an example, TAOC's contractor, Litton Industries, Data Systems Division, was recently nominated by SPAWAR to receive a Department of the Navy "Honorary Acquisition Streamlining Achievement Award." The award is based on achievement, uniqueness, ingenuity, merit, effort, and cost savings, and is designed to stimulate efforts for further cost efficiency and economy (SPECAG ltr of 4 February 1987, p. ii). The award itself is a letter of commendation and wall plaque; recipients are presented the award in the presence of "appropriate Department of the Navy executives." Litton's nomination reads in part (COMSPAWARSYSCOM ltr 003-12/28, 1987, enclosure 1):

> As the program has moved into the production phase, Litton has diligently worked to meet the government specifications, while, at the same time, avoid duplicate and unnecessary costs. Litton worked closely with the government to provide a simplified and efficient data package which will allow the services to maintain the systems and to monitor contractor programs prior to delivery. Through their joint efforts, the government and contractor were able to merge the services' Statement of Work (SOW's), reduce the size of the Contract Deliverable Requirements List (sic) (CDRL's), increase the number of tailored CDRL's, and eliminate unnecessary or duplicate requirements. . . . The streamlining achievements have not come easily. They are the results of many long arduous meetings among the services and between the government and Litton. Litton has been innovative and earnest in their goal to minimize cost without loss of performance or decrease in quality.

This use of industry expertise, innovation, and imagination enhances ASI's chances for success; downstream errors have a much better chance of being avoided. This is not to say primary reliance should be placed upon contractor proposals--the PM and the knowledge/experience he brings from the field is still most important--but civilian expertise is invaluable in proposing new solutions.

2. Streamlining Initiative Approval Garnered by the Program Manager.

Although a PM has final responsibility for his program, he must gain support and periodic authorization from the program sponsor, i.e., Commander, Space and Naval Warfare Systems Command. (COMSPAWARSYSCOM). Right from the beginning, the PM's "Acquisition Plan" must be reviewed and approved by COMSPAWARSYSCOM. This Acquisition Plan is a vital document devised by the PM, and though it differs from program to program, it can cover such areas as:

--Statement of Need.

--Costs (i.e., Life Cycle Costs, Should-Costs).

--Trade-Offs.

--Risks (i.e., Technical, Costs, Scheduling).

--Contracting Considerations.

--Budgeting and Funding.

--Capability of Performance.

--Logistics Considerations (i.e., contractor/government support, reliability, maintainability, quality assurance, warranties).

--Sole Source Procedures.

--Competition.

--Value Engineering.

--Incentives.

--Configuration Management.

Any change or deviation from the Acquisition Plan must be approved by COMSPAWARSYSCOM. For example, the PM of TAOC recently requested a waiver to use the Army military standard, MIL-S-45743E for soldering vice the believed to be excessively stringent Navy soldering standard #WS6536 cited in the Acquisition Plan. The PM felt the Army standard was comparable to the Navy standard in all areas except for requiring less formal reporting--reporting which he felt was not needed. Such a request stems directly from use of streamlining; upon perusal, COMSPAWARSYSCOM authorized the waiver.

In addition, each program must be reviewed by an Acquisition Review Board (ARB) at least annually. The purpose of the ARB is to ensure the program reflects COMSPAWARSYSCOM position and is "logical, executable, and complies with applicable tasking from higher authority" (SPAWARINST 5000.13B, draft, p. 1). The ARB is the primary vehicle for review of programs which are presented to the

the Office of the Secretary of Defense, and is chaired by the Commanding Officer of SPAWAR. Each ARB is pre-screened by the "SPAWAR Oversight Group" and Logistic Assessment Reviews are conducted at this time.

It is during the ARB, which takes place prior to a program entering FSD, that streamlining is closely scrutinized and specifically addressed. It is at this point that official certification is given by the SPAWAR Specification Control Advocate--that the program has been cogently streamlined where possible, and is ready to progress into Full Scale Development.

A. CLOSING REMARKS

In this age of sophisticated, costly weapon systems--and the Gramm-Rudman-Hollings Balanced Budget Act--the Navy can no longer afford to try and cover all angles of acquisition, thereby overspecifying in its contracts. The Navy must assume more <u>risk</u>, if ASI is to succeed. . . one may wonder what is meant by "risk" in this case. Simply put, the Navy must assume more responsibility in allowing for error--and not conduct witch-hunts as is usually the habit, when an error is made. As has previously been determined, streamlining requires an individual (usually the PM) to make a conscious decision. More often than not, that decision to streamline, to take a chance, to assume a bit more risk,

will not be forthcoming if the decision-maker knows he will be beset if he makes an honest mistake. Therein lies the paradox--will those senior officers/ officials supporting ASI really support those junior personnel making an ASI-type decision, when that decision, as it turns out, is wrong? Assuming the streamlining decision made, was well thought out and made with the best of intentions, the answer must be "yes" if ASI is really to succeed.

On the other hand, PMs must be held accountable when they do make a decision to streamline; it cannot be arbitrary. Proper documentation (always a sore point with managers) must be completed, and not in a lackadaisical manner. Serious thought should be given to what is actually streamlined--thought in terms of downstream costs and consequences, as well as to future benefits and immediate dollar savings. The PM's judgment (which appears to truly be behind most streamlining efforts) should be tempered with various analysis tools available, i.e., Cost-Benefit Analysis, Risk Analysis, Delphi Analysis. If Program Managers are truly held responsible and accountable for their actions, then ASI will lead to remarkable acquisition cost savings and avoidances. Assuming the PM recognizes, believes, and accepts this responsibility for either higher acquisition costs OR higher downstream ownership costs, then the certain savings should be greatly in excess of the expected corrective cost value.

In short, it would not be true to insinuate that SPAWAR, and the Navy, has not utilized (and benefited from) the techniques advocated by ASI. They have, and real dollar savings have been achieved. However, it would also not be true to insinuate that the Navy has modified its traditional approach toward acquisition; there has not, as yet, been enough time for it to. Many of the players--and SPAWAR is one--are seriously trying to get the Navy bureaucracy to acclimate itself to this new ASI environment. Success in this arena cannot be measured for some years hence.

B. AREAS FOR FURTHER RESEARCH

Research can be conducted in the areas advanced by the following questions:

1. How much reliance can be placed upon a contractor's desire to streamline, given his profit motive?

2. What logic/evidence can an advocate of ASI give when a decision to streamline is made? How should the logic be arrived at?

3. What does the concept of streamlining suggest about the Military Specification and Standardization process? Should this process be modified, given it will be streamlined? Would this entail an organizational change?

APPENDIX A

DEFINITIONS

1. Acquisition Cycle. Process of procuring a military system. The acquisition cycle is divided into four phases:

I. Concept Exploration
--response to a DOD established threat/need
--program to address this threat is set up

II. Demonstration and Validation Phase (D&V)
--review of system; concept selection
--confirm that required technology is available
--mission/performance envelopes defined

III. Full Scale Development (FSD)
--goal is to produce a fully tested, documented, and production-engineered design of the concept selected in the D&V phase
--three subphases involved in FSD:
a. Engineering
*engineering rendition of the selected technical approach
b. Prototype
*a preproduction prototype model of the engineered design is produced under a controlled atmosphere
c. Pilot-Production
*produced in the real, production environment

IV. Production and Development
--system is produced and fielded

2. Acquisition Streamlining. Any action that results in more efficient and effective use of resources to develop, produce, and deploy quality defense systems and products. This includes ensuring that only cost-effective requirements are included, at the most appropriate time, in system and equipment solicitations and contracts.

3. Application. The process of selecting requirements that are pertinent and cost effective for the particular material acquisition and contractually invoking them at the most advantageous times in the acquisition cycle.

4. Contract Requirements. In addition to specified performance requirements, contract requirements include those defined in the statement of work (SOW); specifications, standards, and related documents, the contract data requirements list (CDRL); management systems; and contract terms and conditions.

5. Cost Avoidance. Program costs "avoided" due to the streamlining effort, i.e., a program will avoid the cost of a requirement that was not called out due to streamlining.

6. Cost Savings. Program costs saved by using commercial products and/or specification/standards versus military specifications/standards.

7. Defense Standardization and Specification Program (DSSP). DSSP is the existing system of specifications/standards used to establish the engineering/technical description of items, materials, processes, methods, practices relevant to DOD acquisition. Currently, is made up of over 45,000 specifications/standards.

8. Design Requirements. Requirements pertinent to the design of an entire system, i.e., performance parameters such as speed, range, maintainability. A system is almost always designed as a group of related subsystems and components.

9. Environmental Requirements. Those circumstances/ requirements under which expected system performance is attained. This is one of the most difficult areas to deal with as it is extremely vulnerable to "worst case" analysis.

10. Functional Requirements. Refers to the requirements which are derived from the Concept Exploration Phase of the acquisition cycle. Functional requirements are the basis for analysis which lead directly to design requirements. Includes both system "operational requirements" and "environmental requirements."

11. Needs. The start of any acquisition process; needs are defined in the Concept Exploration Phase. A "need" is a statement of a desired capability that satisfies a mission deficiency.

12. Non-Developmental Item (NDI). Components or subsystems that are already available for use and require very little, if any, further research and development effort. NDI includes materials developed commercially by DOD, by other governmental agencies, or by other countries.

13. Operational Requirements. User or user representative generated validated needs developed to address mission area deficiencies, evolving threats, emerging technologies or weapon system cost improvements. Operational requirements form the foundation for weapon system unique specifications and contract requirements.

14. Request for Proposal (RFP). Government's written request from private industry for bids to produce a system. Draft RFPs are preliminary RFPs sent to civilian contractors for comment, suggestions, recommendations prior to the actual, official RFP. Once these suggestions are considered by DOD and either implemented or not, the RFP then officially is open for bid. Solicitation is another term for RFP.

15. Scrub. The process of eliminating non-essential features. requirements of a program. Also refers to the addition of essential features previously overlooked.

16. Specifications, Standards, and Related Documents. Documents that establish and define requirements for purchased material, processes, procedures, practices, methods, and data. Such documents encompass all military, federal, and non-government specifications and standards; data item descriptions (DIDs); and other issuances that have the same effect as specifications and standards when cited in solicitations and contracts.

17. Statement of Work (SOW). Enumerates what is intended and needed under the contract; probably the single most important document in a contract file. Describes the objective, purpose, nature, of requirements for work to be accomplished. Additionally, the SOW is used as a tool to evaluate contract progress as it occurs.

18. Tailoring. The process of evaluating individual potential requirements to determine their pertinence and cost effectiveness for a specific system or equipment acquisition, and modifying these requirements to ensure that each contributes to an optimal balance between need and cost. The tailoring of data requirements shall consist of determining the essentiality of potential CDRL items, and shall be limited to the exclusion of information requirement provisions.

19. Technical Data Package (TDP). Provides the user's performance requirements to the developer/producer, along with technical requirements. A TDP is comprised of specifications/standards, the SOW, and the CDRL.

20. Tiers of Referenced Documents. Specifications and standards cited in a contract normally reference other documents (first tier of referenced documents) which in turn reference yet other documents (second tier of referenced documents, third tier, etc.).

21. Trade-Off Analysis. Analyses that identify cost-performance alternatives. Especially useful when new technology is involved, or represents a potential solution to a system problem.

22. Value Engineering. Situation where contractor makes recommendations in areas for more efficient performance. The contractor then shares in the resultant savings.

APPENDIX B

NAVY PROGRAMS FIRST TARGETED FOR STREAMLINING

* Undergraduate Jet Flight Training System (T-45)
* Joint Services Advanced Vertical Lift Aircraft Program (V-22)
* Replacement Inner Zone Air ASW Vehicle (CVIZ HELO)
* Amphibious Assault Ship (multipurpose)
* AE36 (Ammunition Ship)
* Patrol Combatant Multi-Mission Ship
* Advanced Tactical Aircraft
* Worldwide Information System (WIS) Modernization
* Afloat Correlation Program
* EHFSATCOM Terminals
* Relocatable-Over-the-Horizon Radar
* Ship Launched Electronic Decoy
* E6A Aircraft
* VH-60 Presidential Helicopter

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